CLAIMS

1. A method of manufacturing a pneumatic tire with improved tire uniformity; the tire having a pair of spaced beads and at least one carcass ply extending between the beads and consisting of reinforcement cords embedded in a rubber matrix; the method being characterized by the steps of:

a) forming the rubber matrix from a matrix material that can be rendered plastic and rendered non-plastic, which respectively permits and restricts reorientation of one or more of the reinforcement cords relative to other materials or components of the tire;

b) rendering the matrix material plastic before the tire begins to cure to permit the one or more of the reinforcement cords to be unrestricted and free to reorient themselves; and

c) curing the tire in a tire mold while the matrix material remains plastic so that the reinforcement cords remain unrestricted and free to reorient themselves while curing within the mold so that the reinforcement cords maintain or attain a uniform tension

2. Method, according to claim 1, characterized by the step of:

rendering the matrix material nonplastic to restrict further reorientation of the one or more reinforcement cords subsequent to removing the tire from the tire mold.

3. Method, according to claim 1, characterized by the step of:

selecting the matrix material to be a thermoplastic having a deflection temperature;

the step of rendering the matrix material plastic includes the step of heating the matrix material to a temperature above the deflection temperature; and

the step of rendering the matrix material nonplastic includes cooling the matrix material to a temperature below the deflection temperature.

4. Method, according to claim 3, wherein:

the deflection temperature is above 30 degrees C.

5. Method, according to claim 4, wherein:

the deflection temperature is between 121 degrees C and 190 degrees C.

6. Method, according to claim 3, wherein the step of rendering the matrix material plastic includes:

heating the tire in the tire mold to above the deflection temperature to permit reorientation of the one or more reinforcement cords while within the mold.

7. Method, according to claim 3, wherein the thermoplastic matrix material is selected from the group consisting essentially of sulfur vulcanizable, semi-sulfur vulcanizable and non sulfur vulcanizable thermoplastics.

8. Method, according to claim 1, wherein the reinforcement cords are selected from the group comprising Kevlar, steel, rayon, and nylon.

9. Method, according to claim 1, including forming at least a portion of the bead portions from the matrix material.

10. Method, according to claim 9, wherein the matrix material is a thermoplastic and is disposed between a bead and an adjacent portion of the carcass ply.

11. Method, according to claim 10, wherein the step of rendering the material plastic permits the one or more reinforcement cords to slip with respect to a component of the tire.

12. Method, according to claim 11, wherein the step of rendering the material plastic permits the one or more reinforcement cords to slip with respect to a bead.

13. A method of manufacturing a pneumatic tire having a pair of spaced beads in bead portions and at least one carcass ply having reinforcement cords extending between the beads , for improving one or more tire uniformity characteristics, the method being characterized by the steps of:

a) forming at least a portion of the bead portions from a material that can be rendered plastic and rendered non-plastic to respectively permit and restrict reorientation of one or more reinforcement cords relative to other reinforcement cords or components of the tire before the tire has been at least partially vulcanized;

b) rendering the material plastic before the tire begins to cure to permit the plurality of reinforcement cords to reorient themselves; and

c) curing the tire in a tire mold while the material remains plastic so that one or more of the reinforcement cords can reorient themselves during the curing within the mold so that the reinforcement cords maintain or acquire a uniform tension.

14. Method, according to claim 13, wherein the step of rendering the material plastic includes:

heating portions of the tire to above a deflection temperature to permit reorientation of the one or more reinforcement cords.

15. Method, according to claim 14, wherein:

reorienting the one or more reinforcement cords includes the step of slipping the one or more reinforcement cords with respect to the bead.

16. Method, according to claim 15, wherein:

the material is selected from a thermoplastic material having a deflection temperature between 30 degrees C and 190 degrees C; and

the thermoplastic material is selected from the group consisting essentially of sulfur vulcanizable, semi-sulfur vulcanizable and non sulfur vulcanizable thermoplastics.

17. Method, according to claim 16, including:

disposing the thermoplastic material at least partially around the beads to form a thermoplastic layer.

18. Method, according to claim 13, further including:

forming the carcass ply from a plurality of reinforcement cords embedded in a matrix material that can be rendered plastic and rendered non-plastic.

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